REMARKS

This Amendment is responsive to the Office Action mailed May 7, 2008, which sets a three-month shortened statutory period for response, to end August 7, 2008. Claims 1 – 2, 4 – 6, 8 – 10, 12, and 14 are pending and under consideration.

Reconsideration and withdrawal of the rejections made therein are respectfully requested in view of the following remarks.

Information Disclosure Statement

Applicants thank the Examiner for acknowledgement of receipt of the Information Disclosure Statement filed January 14, 2008. The Office Action states that the Information Disclosure Statement has been placed in the application file, but the information referred to therein has not been considered.

Applicants submit that the Information Disclosure Statement filed January 14, 2008 should have been considered, as all of the materials listed therein were provided. Applicants further submit that because the listed document was an Office Action for corresponding Chinese Application No. 200480031178.7, and not a publication, it was not listed on a Form PTO-1449. Applicants further note that in a telephone call with Applicants' representative, the Examiner indicated that the listed materials would be considered along with Applicant's response to the Office Action mailed May 7, 2008.

Claim Rejections – 35 U.S.C. § 103

The Office Action rejects claims 1 – 2, 4 – 6, 10, and 14 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Okazaki et al. (U.S. Patent 6,495,862; hereinafter OKAZAKI) in view of Poicus et al. (U.S. Patent 6,987,613; hereinafter POICUS) and Babich et al. (U.S. Patent Application Publication 2005/0064322 A1; hereinafter BABICH).

The Office Action also rejects claims 8 – 9 and 12 under 35 U.S.C. § 103(a) as allegedly being unpatentable over OKAZAKI in view of POICUS and BABICH, and further in view of Holman et al. (U.S. Patent Application Publication 2004/0080938; hereinafter HOLMAN).

In particular, the Office Action states that OKAZAKI discloses a method of making an LED comprising: forming a transfer layer on at least a part of the transparent crystal substrate or light-emitting layer, softening or setting said transfer layer upon supplying an energy thereto, and forming a minute unevenness structure for preventing multiple reflection based on the minute unevenness structure transferred to the transfer layer. The Office Action further states that OKAZAKI does not expressly disclose pressing a mold formed with a minute unevenness structure against the transfer layer to transfer the minute unevenness structure to an outer surface of the transfer layer. For this missing feature the Office relies upon POICUS, which teaches a method comprising stamping a layer with a stamping block that has a pattern inverse to a pattern of an optical element.

The Office Action also states that OKAZAKI in view of POICUS do not expressly teach (a) a pressing pressure of mold being 5 MPa or higher and 150 MPa or lower, or (b) dry etching the transfer layer with a chlorine gas using the transfer layer as a resist mask to form the minute unevenness structure for preventing the multiple reflection in the transparent crystal substrate or the light-emitting layer. To account for the pressing at 5 MPa or higher and 150 MPa or lower,

the Office Action states that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pressing pressure of 5 MPa or higher and 150 MPa or lower in the method of Okazaki in view of Poicus, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In* re Aller, *105 USPQ 233*" (see Office Action dated May 7, 2008 at page 4, last full paragraph). For forming a minute unevenness structure for preventing the multiple reflections comprising a step of dry etching a transfer layer with a chlorine gas using the transfer layer as a resist mask to form the minute unevenness structure for preventing the multiple reflection in the transparent crystal substrate or the light-emitting layer, the Office relies on BABICH, which teaches that a first layer between a substrate and a second layer having an energy photoactive material is patternable by reactive ion etching in gas chemistry.

The Office Action also states that Applicants previous arguments were found unpersuasive. With regard to the Office's failure to assert and/or provide factual evidence which reasonably show that the pressure ranges utilized in the method of POICUS achieve a recognized result, the Examiner asserts at page 8, section 8 of the Office Action that

> ...it was well known in the art that a pressing pressure of a mold is one of parameters that determine a final structure of a resist in terms of pitch-to-pitch distances, height distributions, and regularities of the molded pattern in the resist. For instance, if the pressing pressure is too low, the molded pattern of the resist would have less sharpness than that of the mold. If the pressing pressure is too high, the resist would be at risk of damage.

In response, Applicants respectfully submit that the instantly claimed methods are not anticipated or suggested by OKAZAKI either alone or in combination with POICUS and/or BABICH and/or HOLMAN. In particular, Applicants note that claim 1 recites a production method for producing a light-emitting device in which a light-emitting layer at least including an

n-type semiconductor layer and a p-type semiconductor layer is layered on a transparent crystal substrate, comprising:

applying a silicon organic solvent to at least a part of the transparent crystal substrate or the light-emitting layer to form a transfer layer on at least a part of the transparent crystal substrate or the light-emitting layer;

softening or setting said transfer layer upon supplying an energy thereto;

pressing a mold formed with a minute unevenness structure against the transfer layer to transfer the minute unevenness structure to an outer surface of the transfer layer under a pressure of 5 MPa or higher and 150 MPa or lower; and

dry etching the transfer layer with a chlorine gas using the transfer layer as a resist mask to form a minute unevenness structure for preventing multiple reflection in the transparent crystal substrate or the light-emitting layer. The documents listed above, either alone or in combination, do not disclose or suggest such a method, and for at least this reason, do not render the claimed invention unpatentable.

In particular, Applicants submit that OKAZAKI, either alone or in combination with POICUS and/or BABICH and/or HOLMAN, fail to teach the specific combination of recited elements such that they comprise the claimed methods, including the combination of mold stamping, etching and pressing as recited. For example, OKAZAKI and BABICH fail to disclose a resist layer which is formed by mold stamping instead of photolithography. Furthermore, POICUS does not compensate for this deficiency because POICUS cannot be combined with the other cited documents to result in the claimed invention. In particular, Applicants submit that POICUS discloses a semiconductor light emitter 100, which includes a top layer 24, a multi-layer structure 26, and a substrate 20 (see POICUS at, e.g., column 8, line

10 through column 9, line 4 and Fig. 9), and which the undersigned is informed mainly consists of silicon. The semiconductor light emitter can be heated during the stamping process to at least the ductile transition point of top layer 24 (column 8, lines 28 – 34). Applicants submit that the ductile transition temperature of silicon is known to be 1420°C. POICUS also discloses that, if necessary, the stamping block 70 is pressed into a top surface of the single body 100 under 100 psi (i.e. 0.7 MPa) or greater (column 8, lines 28 – 34).

In contrast, Applicants submit that the present invention utilizes a silicon organic solvent to form a transfer layer, which is pressed with a mold under a pressure of 5 MPa or higher and 150 MPa or lower to transfer a minute unevenness structure. The ductile transition point of a silicon organic solvent is much smaller than that of silicon, e.g., 70 – 120°C in the case of PMMA. Thus, it would not have been obvious to one of ordinary skill in the art to combine the methods of OKAZAKI with those POICUS and/or BABICH at least because this difference in ductile transition temperatures would make use of the presently claimed pressure ranges practically impossible. Applicants further note that the pressures disclosed in POICUS (100 psi, i.e. 0.7 MPa) reflect the differences in the materials used.

Applicants also respectfully point out that "[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." *In re Antonie*, 559 F.2d 618, 195 U.S.P.Q. 6 (CCPA 1977), *In re Boesch and Slaney* 205 U.S.P.Q. 6 215, 219 (CCPA 1980). Contrary to the aforementioned standard (i.e., as set forth *In re Antonie)*, Applicants submit that the Examiner has not provided any factual evidence which reasonably shows that the pressure ranges utilized in the methods of POICUS achieve a recognized result. Instead, the Examiner has argued that

"...it was well known in the art that a pressing pressure of a mold is one of parameters that determine a final structure of a resist in terms of pitch-to-pitch distances, height distributions, and regularities of the molded pattern in the resist." In particular, the Examiner notes that if the pressing pressure is too low, the molded pattern of the resist would have less sharpness than that of the mold, and if the pressing pressure is too high, the resist would be at risk of damage.

In response, Applicants submit that the Examiner's assertions make clear that it would not have been obvious to combine the cited documents based at least upon the arguments presented above, i.e. the combination of recited elements in the claims would not have been obvious over the cited documents at least in view of the differences in ductile transition points of the materials used (i.e. silicon or silicon oxide, as opposed to silicon organic solvent), which would render the pressures disclosed by POICUS, if combined with the silicon organic solvent of the present invention, a practical impossibility.

Based at least on the foregoing, Applicants submit that POICUS, OKAZAKI, BABICH and/or HOLMAN, either alone or in any properly reasoned combination, do not disclose or suggest at least the claimed combination of elements. Accordingly, Applicants respectfully submit that the rejections under 35 U.S.C. 103(a) should be withdrawn.

Conclusion

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejection of record, and allow all the pending claims.

No fee is believed due at this time. If, however, any fee is necessary to ensure consideration of the submitted materials, the Patent and Trademark Office is hereby authorized to charge the same to Deposit Account No. 19-0089.

Should there be any questions, the Examiner is invited to contact the undersigned at the below listed telephone number.

Respectfully submitted,
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